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ABSTRACT

A study of final student academic outcomes was conducted at Prince George's Community College (PGCC), Maryland, using the lifestyle cluster of PG-TRAK90, the college's proprietary geo-demographic analysis system which targets new educational markets and tracks student needs and performance. Of the fall 1990, first-time-in-college cohort, 90% (n=2,386) were successfully cluster-identified into one of 12 categories in the lifestyle classification scheme. Study findings included the following: (1) by spring 1994, 16% of the fall 1990 cohort had achieved a degree or diploma or transferred; 13% were sophomores in good standing; 7% were academically unsuccessful, but were continuing their enrollment at PGCC; and 64% were unsuccessful exiters; (2) there appeared to be a regular and fairly strong direct relationship between the social status of a student's residential neighborhood and his/her likelihood of academic success at PGCC, with 42% of the cohort from primarily white middle-class areas; 30% of the students from mixed race, middle-class neighborhoods; and 26% of the students from mixed race, lower middle class neighborhoods successfully earning an award, transferring, or being a sophomore in good standing within 4 years; and (3) the link between the socio-economic status of students' neighborhoods and their academic success remained in evidence for specific success measures. (KP)

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# Enrollment Management Targeting by PG-TRAK: Cluster Analyzing Cohort 1990 Four-Year Outcomes Groups. Market Analysis MA95-5

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**PRINCE GEORGE'S COMMUNITY COLLEGE**
**Office of Institutional Research and Analysis**

# ENROLLMENT MANAGEMENT TARGETING BY *PG-TRAK*$^{90}$©: CLUSTER ANALYZING COHORT 1990 FOUR YEAR OUTCOMES GROUPS

Market Analysis MA95-5
March 1995

## *Introduction*

This market analysis is the final entry in a series of studies exploring the potential application of *PG-TRAK*$^{90}$, PGCC's proprietary geo-demographic analysis system, in such enrollment management tasks as targeting new educational markets and tracking student needs and performance.[1] Here the task at hand is viewing the final academic outcomes of student careers at PGCC through the prism of the *PG-TRAK*$^{90}$ lifestyle cluster system. The knowledge derived from this sort of analysis can be of great help to enrollment managers and academic policy planners who need to understand how targeted recruitment efforts, within the context of the diverse sociology of the county, impact on the academic operation of the college.

## *Methodology*

Once again, the subject group chosen for analysis was the Fall 1990 entering cohort, the academic behavior of which the Office of Institutional Research and Analysis has been routinely tracking by means of a special comprehensive student record data set updated each semester. Consisting of all Fall 1990 newly PGCC-enrolled students without any prior college-level experience, Cohort 1990 numbered 2,643 members, 2,386 (90 percent) of whom were successfully cluster-identified.[2]

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[1]See OIRA publications beginning with major title *Enrollment Management Targeting by* PG-TRAK$^{90}$: *Market Profiling the 1994 County High School Graduating Class for Student Recruitment* (MA95-1, July 1994), *Market Profiling the County High School Top SAT Scorers for Student Recruitment* (MA95-2, July 1994), and *Cluster Identifying Potential "At-Risk" Students for Enrollment Retention Programs* (MA95-3, September 1994).

[2] Cohort 1990 cluster codes have been updated using AccuMail's address list geo-coding technology, for 13 percent improvement in cohort member classification. Thus, the student cluster proportions presented in this paper vary somewhat from past accounts.

The version of *PG-TRAK*[90] selected for use in this study was the 15-level lifestyle classification scheme.[3] This was modified to 12 categories: one cluster proved to contain no cohort members (9-Asian Mix) and two showed unanalyzably small subsample sizes (*7-Fort George* (n=7) and *10-Town & Gown* (n=17)); each of these latter student clusters was merged into another cluster it demographically most closely resembled.[4] To assess student final outcomes we employed the college's standard seven-fold scheme:

**Transfer Only** -- those enrolling in a senior college or university without earning an associate degree, certificate or letter-of-recognition[5].

**Award Only** -- those earning an associate degree, occupational certificate or letter-of-recognition but no evidence of transfer to a senior institution.

**Both Transfer and Award** -- those both graduating and transferring

**Sophomore in Good Standing** -- those earning at least 30 credit hours while maintaining a 2.0 or better G.P.A but neither graduating nor transferring.[6] These can be further divided into continuing students and exiters.

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[3] For a complete description of the 15-level lifestyle cluster system, see PG-TRAK[90] -- *Prince George's Community College's Lifestyle Cluster Marketing System: Introduction and Ready Reference* (MA93-1, November 1992)

[4] Cluster 7 was joined to *6-Rural Development* (n=294), Cluster 10 to *8-Cosmopolitans* (n=58).

[5] Data supplied by the Maryland Higher Education Commission SOAR project. Previous SOAR transfer data tracked students only through FY 1993, but the recently acquired latest version is now complete through FY 1994. With the newest addition, this data set covers the entire four-year history of Cohort 1990's existence, and the cohort's transfer data elements have been updated accordingly. An important limitation of the SOAR data still exists, however: No tracking mechanism yet exists for identifying transfers to private senior or out-of-state institutions; thus, our two transfer final outcome categories understate the full extent of PGCC student transference by an unknown but probably significant degree.

[6] A weaker "success" category than graduation or transfer, it nevertheless represents genuine academic achievement. Exiting sophomores in good standing have made substantial quality academic progress and should be well positioned to continue their higher educational careers at PGCC or any other two year or four year school whenever willing or able in the future. Furthermore, a large but undeterminable proportion of students in this category are actually "hidden" four year school transfers -- either current enrollees at out-of-state colleges, Maryland private colleges and universities or to Maryland public institutions *after* SOAR's most recent data collection deadline of Summer 1994. (See footnote 1).

The above four outcome types can be combined into a general **academic success** category, which we frequently utilized to get an efficient summary sense of how at-risk students fared under a variety of institutional circumstances. The remaining outcome categories are either neutral or outright negative:

**Others Still in Attendance** -- cohort members continuing to the end of the four year interval without exiting (enrolled in either Spring 1994 or in one or both of the two subsequent summer terms) but also without earning either an award, transfer or sophomore status in good standing.

**Other Exiters** -- all other students with no record of enrollment beyond Fall 1993, including those with overall passing averages (cumulative G.P.A. 2.0+) but pre-sophomore credit hour accumulations or who had earned 30+ credit hours but had sub-standard average grades -- the genuine "drop-outs."

**Special Motive Students** -- those whose stated goals for attending classes at PGCC (personal enrichment, upgrading job skills, etc.) and short-term attendance patterns (only the first and/or second terms) strongly suggested enrollment motives other than the pursuit of a regular program of study leading to an award or transfer to a four year institution. These are the students who purposely set out to take only one or a handful of courses and never had any intention of entering a curriculum program in the first place. They should not be classified as "drop-outs"; rather they are a special group, apart from the regular run of PGCC enrollees, and therefore neutral from the standpoint of student body academic outcomes. In calculating outcome category percentages and the summary success rate we will exclude them from the base.

***Findings***

The basic story of how cultural, socio-economic and life-cycle variables, as summarized by *PG-TRAK*$^{90}$ cluster blocks, impact on PGCC student outcomes is told in the table just below. The data display presents cluster-by-cluster percentages for the categories of our standard outcomes paradigm, condensed to four classifications to simplify discussion.

The outcomes categories are: A. Awards and/or Transfer (either earned A.A./Certificate/Letter-of-Recognition or successful transfer to a four-year institution or both); B. Sophomore in Good Standing (exited or continuing students *not* in the A-category who accumulated at least 30 credit hours within four years at PGCC while maintaining a C grade average or better); C. Unsuccessful continuing students

| % COHORT 1990 SUCCESSFUL BY CLUSTER BLOCK* [TOTAL N] | A. AWARDS/ TRANSFERS | B. SOPHOMORES IN GOOD STND | A+B SUCCESSFUL | C. UNSUCCESSFUL CONTINUING | D. UNSUCCESSFUL EXITERS |
|---|---|---|---|---|---|
| *WHITE UPPER-MIDDLE [486]* | *26 %* | *16 %* | *42 %* | *5 %* | *53 %* |
| 03-Beltway Havens [120] | 26 % | 24 % | 50 % | 4 % | 46 % |
| 01-Exurban Elite [292] | 27 % | 13 % | 40 % | 5 % | 55 % |
| 08-Cosmopolitans [74] | 23 % | 15 % | 38 % | 7 % | 55 % |
| | | | | | |
| *MIXED MIDDLE [731]* | *17 %* | *13 %* | *30 %* | *7 %* | *63 %* |
| 12-Old PG County [67] | 21 % | 13 % | 34 % | 8 % | 58 % |
| 06-Rural Development [270] | 16 % | 14 % | 30 % | 6 % | 64 % |
| 04-Upwardly Mobiles [248] | 19 % | 11 % | 29 % | 8 % | 63 % |
| 02-Black Enterprise [146] | 16 % | 13 % | 29 % | 8 % | 64 % |
| | | | | | |
| *MIXED LOWER MIDDLE [497]* | *13 %* | *13 %* | *26 %* | *7 %* | *67 %* |
| 14-Ethnic Mix [117] | 11 % | 15 % | 27 % | 8 % | 66 % |
| 05-Black Middle America [263] | 14 % | 11 % | 25 % | 8 % | 67 % |
| 11-Minority Comers [117] | 12 % | 13 % | 25 % | 6 % | 69 % |
| | | | | | |
| *BLACK WORKING CLASS [451]* | *8 %* | *9 %* | *17 %* | *9 %* | *74 %* |
| 13-Blue Collar Black [223] | 9 % | 11 % | 20 % | 7 % | 73 % |
| 15-City Line [228] | 7 % | 7 % | 14 % | 11 % | 75 % |
| | | | | | |
| **WHOLE SAMPLE [2,165]** | **16 %** | **13 %** | **29 %** | **7 %** | **64 %** |



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(those still attending PGCC after four years without yet winning either an award or transfer); and D. Unsuccessful Exiters (students leaving PGCC during the four year interval without an award or discernable transfer to their credit).

The table also includes a summary column (shaded) which provides cluster block overall success rates (A+B). The table's rows are arranged in cluster block success rate order (highest to lowest). When we first did this, it was immediately evident that such an order naturally caused the 12 study cluster blocks to fall into larger groupings representing major county neighborhood race and socio-economic status divisions: white upper-middle class areas, racially assorted pure middle class areas, racially assorted lower-middle class areas and solidly African American blue collar areas. Taking advantage of this discovery, we included these racial/socio-economic status divisions in the table as four rows showing collective cluster block results. Most of the meaningful findings that can be gleaned from the table require only an examination of race/socio-economic grouping outcome rates.

Clearly, there exists a regular and fairly strong direct relationship between the social status rank of a student's residential neighborhood and his or her likelihood of academic success at PGCC: 42 percent of the 1990 cohort students from White Middle-Class areas successfully earned either an award, transfer or sophomore in good standing status within four years, followed by 30 percent of Assorted Race Middle Class area students and 26 percent of Assorted Race Lower Middle Class area students. At the bottom in success rate terms (only 17 percent) were students from mostly black, blue collar neighborhoods. Conversely, as we climb down the socio-economic scale while focusing on Unsuccessful Exiter percentages, we find proportions regularly increase, from a 53 percent drop-out rate among White Upper Middle Class area students to nearly three-quarters (74 percent) for those living in black blue collar locales.

Furthermore, we find that this pattern -- the better a student's probable home socio-economic environment, the greater his or her chance of academic success -- is repeated for more specific success measures: percent earning awards and/or transferring and percent otherwise progressing to sophomore in good standing status. The next table digs deeper into the socio-economics/academic success link. It elaborates the award and/or transfer category two ways.

First, it gives a three-way break of mutually exclusive sub-measures: percent transferring to four year institutions only, percent earning awards but not transferring and percent both winning an award *and* transferring. Transfer Only and Award-plus-Transfer students disproportionately originate in White Upper-Middle Class areas and to a lesser extent in Mixed Middle Class areas, while students living in black blue

collar neighborhoods with these achievements are practically unknown . For example, 19 percent of the top grouping students managed to transfer without a degree, compared with 3 percent of the bottom grouping students.

The second set of columns displays percentages for all transfers (with or without award) and for all award earning (with or without transfer) by socio-economic grouping. Once again we find the class-success link in operation. The last column, however, presents something new -- the ratio of transfer occurrences to award earning occurrences by status grouping. In turns out that this, too, is class-linked. Not only did students from higher status areas win more awards and transfers than their opposites, but also, those successes were, proportionately, more likely to represent transfer success than award earning success. For instance, in the top grouping the ratio was almost three transfers for every one award (2.97); in the bottom group is was just about even (1.05). The better a student's probable socio-economic background, the more exclusively transfer-oriented he or she is likely to be.

***Cohort 1990 Traditional Academic Outcomes (Four Year) by Socio-Economic Grouping***

| Cluster Block Socio-Economic Grouping | % Award and/or Transfer | % Transfer Only | % Awrd & Transfer | % Award Only | % All Trnsfers | % All Awards | Transfer /Award Ratio |
|---|---|---|---|---|---|---|---|
| White Upper-Middle | 26 | 19 | 5 | 3 | 23 | 8 | 2.97 |
| Mixed Middle | 17 | 10 | 3 | 5 | 13 | 7 | 1.73 |
| Mixd Lower Middle | 13 | 8 | 2 | 4 | 9 | 5 | 1.74 |
| Black Blue Collar | 8 | 3 | 1 | 3 | 5 | 4 | 1.05 |
| | | | | | | | |
| Whole Cohort | 16 | 10 | 3 | 4 | 13 | 6 | 1.97 |

NOTE: Percentages rounded up; may result in minor summing discrepancies

But before we accept the above findings, we should at least make some attempt to test whether the student class-academic success link stands up under statistical controls. The socio-economic groupings we have been using are constructed out of *PG-TRAK*$^{90}$ cluster blocks, and the cluster system in turn is mainly based upon two types of U.S. Census Bureau data elements -- cultural variables (mostly racial and ethnic background) and socio-economic variables (household income, median years

of education, percent white collar jobs, etc.). Furthermore, in our county as elsewhere minority status still statistically correlates with lower socio-economic position. Therefore, it is possible that class-success link is spurious, the product of some non-socio-economic component of the overall cluster data set -- in particular, that of racial background. Is the apparent social class/academic success link we have been uncovering independent of cultural factors or is it merely the spurious product of the hidden impact of race on student academic progress or the lack. The last table we will review in this report tests for this possibility.

***Success Rate by Socio-Economic Grouping and White/Minority Background***

| Cluster Block Socio-Economic Grouping | % *All* | % *Whites Only* | % *Minority Only* | Mean Eta (Var Contl'd) |
|---|---|---|---|---|
| White Upper-Middle | 42 | 46 | 33 | -- |
| Mixed Middle | 30 | 43 | 21 | -- |
| Mixd Lower Middle | 26 | 39 | 22 | -- |
| Black Blue Collar | 17 | 38 | 16 | -- |
| *Eta Correlation* | *.190* | *.052* | *.117* | *.084** |
| | | | | |
| Whites | 44 | -- | -- | -- |
| All Minorities | 21 | -- | -- | -- |
| *Eta Correlation* | *.246* | -- | -- | *.165*** |
| | | | | |
| Whole Cohort | 29 | 44 | 21 | -- |

NOTE: -- indicates undefined table cell. * Average of Whites Only (.052) and Minorities Only (.117) class/success *etas*; ** Average of the four Class Groupings race/success *etas* (not shown)

The above table shows the relationship between student cluster-defined socio-economic background and academic success *controlling for racial background*. In the first column, it provides separate abbreviated cross-tabulations for socio-economic group and racial group by academic success. In the top four rows of the second and third columns it presents two truncated cross-tabulations which show how race

interacts with class to effect in the prediction of academic success by splitting socio-economic groups into white student and minority student sub-samples.

The table also displays *Eta* correlation coefficients which give quick summaries of the level of predictive power found in each cross-tabulation. *Eta* coefficients vary mathematically from 0 (random relationship) to 1 (the predictor variable explains 100 percent of the variation of the predicted variable). As a rule of thumb, any predictor which explains 10 percent or better of the variance of a target variable is considered as playing an important role in a causal system.

According to the table, both student socio-economic and racial background, taken separately, are important factors in influencing student progress. Race predicted academic success at the .25 *Eta* level, and class at the .19 level. But when class background was correlated with academic success, controlling for the effects of racial background, the class-to-success correlation dropped to relative insignificance within the white student sub-sample -- *Eta* .05. This can also be grasped less technically in terms of percentage ranges. For the whole cohort, we found a wide 25 percent range between top and bottom class groups but only a narrow 8 percent range across the white sub-sample status group. Among minority students, however, the correlation retained most of its robustness -- *Eta* .12 (or a 17 percent range between top and bottom status groups).

When these two sub-sample *Eta*s are averaged, the result can be interpreted as a single figure indicator of the true explanatory power of the socio-economic group variable when the inflating influence of racial background is removed -- mean *Eta* .08, suggesting much less important level of impact than it first seemed was the case but still one near the level of respectability (*Eta* .1). When the race-success correlation was tested controlling this time for class group, the predictive power of the race variable also declined -- mean *Eta* .17 -- but still remained very robust.

***Conclusions***

An analysis of the four-year study outcomes of the 1990 entering freshman cohort found that a PGCC student's *PG-TRAK*$^{90}$ cluster classification is a reasonably good predictor of the likelihood of that student making it into at least one of several categories of academic success. Specifically, we found a definite link between social class, as gauged from cluster identification, and standard academic success measures -- the better a student's probable socio-economic environment, the better his or her chance of scholarly achievement.

This proved true whether success was measured in terms of earning awards, transferring to four-year schools or becoming a sophomore in good standing. (A secondary finding was: the higher a successful student's residential status, the greater was his or her propensity to transfer without graduating.)

Furthermore, the class link with academic success proved definite and important even when we controlled for the effects of the powerful racial background variable, although its predictive weight did drop significantly. Most of this drop occurred on the white student side of the whole cohort sample; for minority students, socio-economic environment remained a potent predictor of academic success.

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